

### **REMARKS**

The Office Action dated June 18, 2004 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 23, 24, 31, and 32 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 1-32 are respectfully submitted for consideration.

In the Office Action, claims 23, 24, 31, and 32 were objected to because of insufficient antecedent basis in the claims. Claims 23 and 24 have been amended to be dependent upon claim 22, while claims 31 and 32 have been amended to be dependent upon claim 30. Therefore, this objection is rendered moot.

Claims 1-32 were rejected under 35 U.S.C. §102(a) as being anticipated by Roth (U.S. Patent No. 6,430,666). The Office Action alleged that the claims were rejected under 35 U.S.C. §102(a), however applicants assume that the rejection is made under 35 U.S.C. §102(e) as the reference did not issue prior to the filing of the current application. In any event, the Official Action took the position that Roth teaches all of the elements recited in the claimed invention. Applicants respectfully submit that the presently pending claims recite subject matter that is neither disclosed nor suggested by Roth. Thus, the rejection is respectfully traversed for the reasons which follow.

Independent claim 1, upon which claims 2-4 are dependent, recites a memory management method. The method includes assigning pointers to free memory locations,

linking the pointers to one another creating a linked list of free memory locations having a beginning and an end, assigning a free head pointer to a memory location indicating the beginning of free memory locations, assigning a free tail pointer to a memory location indicating the end of free memory locations, assigning an initial data pointer to the memory location assigned to said free head pointer, assigning an end of data pointer to a last data memory location, and assigning the free head pointer to a next memory location linked to said last data memory location assigned to said end of data pointer, wherein the next memory location indicates said beginning of free memory locations.

Claim 5, upon which claims 6-8 are dependent, also recites a memory management method. The method includes the steps of: assigning pointers to free memory locations, linking the pointers to one another creating a linked list of free memory locations having a beginning and an end, assigning a free head pointer to a memory location indicating the beginning of free memory locations, assigning a free tail pointer to a memory location indicating the end of free memory locations, linking the memory location assigned to the free tail pointer to the memory location assigned to an initial data pointer when memory locations occupied by data are to be indicated as free memory, and assigning the free tail pointer to the last data memory location assigned to the end of data pointer.

Claim 9, upon which claims 10-12 are dependent, recites a memory management system. The system includes a pointer assignor that assigns pointers to free memory locations, a linker that links the pointers to one another thereby creating a linked list of

free memory locations having a beginning and an end, a free head pointer assignor that assigns a free head pointer to a memory location indicating the beginning of the linked list of free memory locations, a free tail pointer assignor that assigns a free tail pointer to a memory location indicating the end of the linked list of free memory locations, an initial data pointer assignor that assigns an initial data pointer to the memory location assigned to the free head pointer, and an end of data pointer assignor that assigns an end of data pointer to a last data memory location. The free head pointer assignor assigns said free head pointer to a next memory location linked to said last data memory location assigned to the end of data pointer, and the next memory location indicates the beginning of free memory locations.

Claim 13, upon which claims 14-16 are dependent, also recites a memory management system. The system includes a pointer assignor that assigns pointers to free memory locations, a linker that links said pointers to one another thereby creating a linked list of free memory locations having a beginning and an end, a free head pointer assignor that assigns a free head pointer to a memory location indicating said beginning of said linked list of free memory locations, and a free tail pointer assignor that assigns a free tail pointer to a memory location indicating said end of said linked list of free memory locations. The linker links said memory location assigned to said free tail pointer to said memory location assigned to an initial data pointer when memory locations occupied by data is to be indicated as free memory, and the free tail pointer

assignor assigns said free tail pointer to said last data memory location assigned to said end of data pointer.

Claim 17, upon which claims 18-20 are dependent, recites a memory management system. The system includes a pointer assignor means for assigning pointers to free memory locations, a linker means for linking said pointers to one another thereby creating a linked list of free memory locations having a beginning and an end, a free head pointer assignor means for assigning a free head pointer to a memory location indicating said beginning of said linked list of free memory locations, a free tail pointer assignor means for assigning a free tail pointer to a memory location indicating said end of said linked list of free memory locations, an initial data pointer assignor means for assigning an initial data pointer to said memory location assigned to said free head pointer, and an end of data pointer assignor means for assigning an end of data pointer to a last data memory location. The free head pointer assignor means assigns said free head pointer to a next memory location linked to said last data memory location assigned to said end of data pointer, and the next memory location indicates said beginning of free memory locations.

Claim 21, upon which claims 22-24 are dependent, recites a memory management system. The system includes a pointer assignor means for assigning pointers to free memory locations, a linker means for linking said pointers to one another thereby creating a linked list of free memory locations having a beginning and an end, a free head pointer assignor means for assigning a free head pointer to a memory location indicating

said beginning of said linked list of free memory locations, and a free tail pointer assignor means for assigning a free tail pointer to a memory location indicating said end of said linked list of free memory locations. The linker means links said memory location assigned to said free tail pointer to said memory location assigned to an initial data pointer when memory locations occupied by data is to be indicated as free memory, and the free tail pointer assignor means assigns said free tail pointer to said last data memory location assigned to said end of data pointer.

Claim 25, upon which claims 26-28 are dependent, recites a memory management device. The device includes a pointer assignor that assigns pointers to free memory locations of a memory, a linker that links said pointers to one another thereby creating a linked list of free memory locations having a beginning and an end, a free head pointer assignor that assigns a free head pointer to a memory location indicating said beginning of said linked list of free memory locations, a free tail pointer assignor that assigns a free tail pointer to a memory location indicating said end of said linked list of free memory locations, an initial data packet pointer assignor that assigns an initial data packet pointer to said memory location assigned to said free head pointer, and an end of data packet pointer assignor that assigns an end of data packet pointer to a last data memory location in said memory. The free head pointer assignor assigns said free head pointer to a next memory location linked to said last data packet memory location assigned to the end of data packet pointer, and the next memory location indicates the beginning of free memory locations.

Claim 29, upon which claims 30-32 are dependent, recites A memory management device. The device includes a pointer assignor that assigns pointers to free memory locations of a memory, a linker that links said pointers to one another thereby creating a linked list of free memory locations having a beginning and an end, a free head pointer assignor that assigns a free head pointer to a memory location indicating said beginning of said linked list of free memory locations, and a free tail pointer assignor that assigns a free tail pointer to a memory location indicating said end of said linked list of free memory locations. The linker links said memory location assigned to the free tail pointer to the memory location assigned to an initial data pointer when memory locations occupied by data is to be indicated as free memory, and the free tail pointer assignor assigns the free tail pointer to the last data memory location assigned to the end of data pointer.

The prior art reference of Roth fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the advantages discussed above.

Roth discloses a method of forming a linked list in memory using an address generator. The address generator assigns addresses to each of multiple lists, where each list corresponds to a device which uses the memory. When the address generator has assigned each address location once, a free list is used to track available addresses. The free list is not used until all addresses have been assigned once. A counter is incremented each time an address is assigned; the value of the counter provides the address for a write

operation. The free list is not used until the counter has been used to assign all addresses in the memory.

Claim 1 contains the limitations “assigning an initial data pointer to said memory location assigned to said free head pointer” and “assigning an end of data pointer to a last memory location.” Claims 9, 17, and 25 contain similar limitations. Roth, however, fails to disclose or suggest such limitations.

In the currently claimed invention, when a first packet of data is to be saved, the initial data pointer would be assigned to the memory location where the free head pointer was assigned. Then the next memory location linked to the memory location assigned to the initial data pointer would be assigned to store more data. An end of data pointer is assigned to the last data location storing the data packet. The free head pointer would then be assigned to the next free memory location indicating the beginning of free memory (Specification, page 24, lines 3-12).

Roth fails to disclose or suggest an initial data pointer or an end of data pointer, as recited in the currently pending claims. Roth does not use initial and end of data pointers to indicate the beginning and end of a data packet saved in memory. Rather, Roth uses a list which contains a series of values corresponding to a location in memory. The values are then used to look up the related data entries from memory. The list pointer contains the location of the next data entry of the list (Roth, Column 8, lines 4-24). Therefore, Roth fails to disclose the use of data pointers to point to the specific memory location

where a data packet begins and ends. Consequently, Roth fails to anticipate the elements of claims 1, 9, 17, and 25.

Applicants note that claims 2-4, 10-12, 18-20, and 26-28 are dependent upon claims 1, 9, 17, and 25, respectively. Therefore, applicants respectfully submit that claims 2-4, 10-12, 18-20, and 26-28 should be allowable for at least their dependence on claims 1, 9, 17, and 25, and the specific limitations recited therein.

Claim 5 contains the limitations “linking said memory location assigned to said free tail pointer to said memory location assigned to an initial data pointer when memory locations occupied by data is to be indicated as free memory” and “assigning said free tail pointer to said last data memory location assigned to said end of data pointer.” Claims 13, 21, and 29 contain similar limitations. Roth, on the other hand, fails to disclose or suggest such a limitation.

Figure 4B of the currently claimed invention illustrates the steps taken when the location of a data packet is indicated as being free memory. First, the memory location assigned to the initial data pointer is linked to the memory location assigned to the free tail pointer. For instance, in figure 3C, packet 1 previously occupied memory locations 302, 306, and 308. In this case, the free tail pointer was assigned to memory location 316. The memory location assigned to the free tail pointer 316 is then linked to the memory location assigned to the initial data pointer, memory location 302. In the next step, the free tail pointer is assigned to the memory location assigned to the end of data pointer (Specification, page 25, paragraphs 0076-0078).



Roth does not disclose or suggest the limitations discussed above. Instead, Roth discloses that “once each address has been assigned to a list, the free list will then begin to track available addresses within memory. Memory locations are added to the free list on remove operations and are removed from the free list on add operations” (Roth, Column 8, line 66 – Column 9, line 3). Thus, Roth fails to disclose or suggest linking the memory location assigned to the free tail pointer to the memory location assigned to the initial data pointer when memory locations occupied by data are indicated as free memory, and therefore fails to anticipate the elements of claims 5, 13, 21, and 29.

Applicants note that claims 6-8, 14-16, 22-24, and 30-32 are dependent upon claims 5, 13, 21, and 29, respectively. Therefore, applicants respectfully submit that claims 6-8, 14-16, 22-24, and 30-32 should be allowable for at least their dependence on claims 5, 13, 21, and 29, and the specific limitations recited therein.

Applicants respectfully submit that Roth fails to disclose or suggest critical and important elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore, respectfully requested that all of claims 1-32 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant’s undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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